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# lean - ISD<sup>SM</sup>

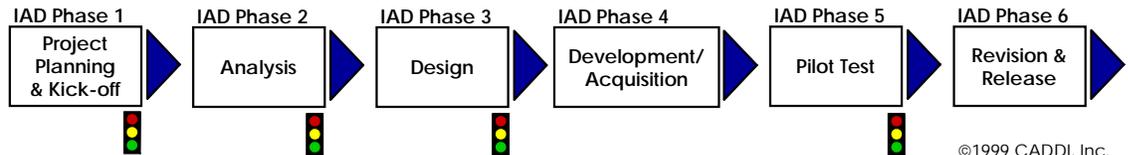
lean-Instructional Systems Design via the PACT<sup>SM</sup> Processes for T&D

THE CADDI NEWSLETTER

Spring 1999 Volume II, Issue 2

## A PACT PROCESS OVERVIEW

### Developing Instructional Activities with IAD



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The PACT  
Processes

**CAD** Curriculum  
Architecture  
Design  
*Systems Engineering  
of T&D Product Line*

**MCD** Modular  
Curriculum  
Development  
*New Product Development  
of T&D Products*

**IAD** Instructional  
Activity  
Development  
*Development of  
Instructional Activities*

*CADDI partner Guy W. Wallace explains  
the purpose of and processes used in IAD.*

Instructional Activity Development<sup>SM</sup> (IAD) is the *microlevel* of the three PACT Processes for T&D. It is a performance-based, *lean-ISD*, instructional systems design methodology.

IAD is used to generate a number of "instructional activities," including

- ▶ Instructional content at the awareness, knowledge, or skill levels
- ▶ Knowledge tests
- ▶ Performance tests
- ▶ Simulation exercises
- ▶ Performance aids
- ▶ Electronic (or paper) desk procedures

Because the PACT Processes allow ISD suppliers and their customers to start projects at any level to meet short-, medium-, and long-term needs, they offer tremendous flexibility in meeting business requirements and minimize the downstream costs of expanding their efforts. For example

- ▶ You can start at the top with a *macrolevel* Curriculum Architecture Design<sup>SM</sup> (CAD). This provides a strategic view of the total learning needs. T&D that has targeted strategic value can then be "cherry-picked" for development and deployment.
- ▶ You can start with a Modular Curriculum Development<sup>SM</sup> (MCD) *midlevel* effort by developing T&D Events that make immediate sense and are "no-brainers" in terms of the

need and value for meeting the need.

- ▶ You can begin at the *microlevel* of IAD and develop and deploy portions of T&D instruction that may end up in a full-blown instructional package later.

The use of the keystone methodologies of Performance Modeling and Knowledge/Skill Analysis are ever critical to ensuring the performance orientation of any of our design efforts.

#### *Six Phases of an IAD Project*

The PACT Process IAD project is conducted in six phases.

The instructional activities that result from an IAD project can stand on their own (performance tests, for example) or be part of an MCD effort. (MCD's lesson development phase mirrors the process of the IAD effort and includes the

*(Continued on page 6)*

## Inside

- ▶ Learn how performance testing is a good business practice. And it's not difficult. Page 2
- ▶ Guy Wallace joins ISPI Board of Directors. Page 2
- ▶ When does "go to the plant and get some experience" fall short of expectations? See how General Motors used existing CAD data to create S-OJT. Page 3
- ▶ Meet a new addition to the CADDI family. Page 10



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Spring 1999

Volume II, Issue 2

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# *It Only Counts if You Can Do the Job!*

By Peter R. Hybert and Kelly A. Rennels

## ***This is a test!***

Question 1. *Who would you rather have performing a heart bypass operation?*

- (a) A doctor who has been well-trained
- (b) A doctor who has successfully performed 100 operations on patients of all ages and conditions

For most of us, the answer is clear: we'd choose a doctor who has a proven track record of performing the surgery on hundreds of patients. It's also clear that training alone doesn't ensure the ability to perform. That requires verification—objective measurement that the performer can do the task effectively in "real-world conditions."

So, why is it that many companies and ISD professionals avoid using performance-based testing? It's due, in our opinion, to three common misconceptions about how to verify or test an individual's capability to perform.

- ▶ Testing knowledge confirms a person's capability to perform tasks.
- ▶ It is too difficult to certify performance.
- ▶ Different tests are required for qualification, training, and coaching/S-OJT applications.

The facts about performance testing dispute these misconceptions. Performance-based testing actually improves on-the-job performance, helps

manage individual capability, results in better training, and is not prohibitively difficult or complex to implement.

## ***It's Just Good Business***

Performance-based testing offers clear advantages to the savvy businessperson. For example, performance-based testing can

- ▶ Eliminate excess training by letting skilled participants "test out" of training they don't need.
- ▶ Support on-the-job training (S-OJT) delivered by a coach by describing performance expectations and criteria to guide coaches and learners.
- ▶ Be used to standardize performance and to qualify employees (or *an* employee) in specific tasks by providing standard "checkpoints" to be tracked.
- ▶ Permit learners to choose the way they develop a skill, as long as they can pass the performance test.
- ▶ Provide the basis for an employee "capability inventory" by tracking and managing information on who is qualified to perform specific tasks (if this is designed into the overall system).

The bottom line? Performance testing can actually reduce training costs and improve quality.

*(Continued on page 11)*

## ***Guy Joins ISPI Board of Directors***

By Debra S. Arndt



CADDI is pleased to continue its support for ISPI. Guy has recently been elected as a member of ISPI's Board of Directors.

"As a member since 1980, I am very pleased to be able to serve the society for the next two years as a member of the Board of Directors," Guy said. "I am looking forward to

joining the two new members and the existing team."

Guy joins new directors Jim Hill and Lynn Kearny; incoming president-elect John M. Swinney; and continuing members Dale Brethower, Rosalynne Price, Carol Haig, and Richard Battaglia to form the 1999-2000 ISPI Board of Directors. ▶▶▶▶

# *Straightforward Approach to S-OJT at General Motors Helps New Supervisors*

By Peter R. Hybert

Ensuring that classroom learning is applied back on the job has been a long-standing challenge to course designers and developers. One of our clients, General Motors, faced this problem when they made the strategic decision to hire a group of employees and put them through a comprehensive, 18-month program of training and in-plant experience to become tool and die supervisors.

As part of their development, the potential supervisors attended formal training courses at General Motors University. Between courses, they were assigned to General Motors plants and facilities to complete structured, on-the-job training (S-OJT) and to gain work experience relevant to the training they just attended.

But our client found that the “go to the plant, get some experience” approach needed more structure—many of the new hires did not have the opportunity to apply the learning primarily because their on-the-job coaches lacked a formal means to make learning-related assignments.

General Motors had existing analysis data (including a Performance Model) for these jobs developed through a CAD project conducted about one year earlier. They also had a clear picture of what learning was to occur during each week of the 18-month process.

So, we formed a small team of subject matter experts to design a set of structured job assignments for the learners and coaches. The goal was to add new assignments gradually (while retaining previous ones) so that, at the end of the 18-month training cycle, the learners would be performing all supervisory duties when at the plant.

The methodology was simple. The existing curriculum schedule gave a clear picture of when certain skills, tasks, etc. would be formally learned within the 18-month cycle. With that schedule posted on the wall, the team simply processed through the existing Performance Model and identified

- ▶ “Assignment-sized” chunks (complete output/

*(Continued on page 13)*

*General Motors found that “go to the plant, get some experience” didn’t work for their new supervisors.*

# *Shorter Learning Cycles, Better Performance*

By Kelly A. Rennels

Just how long does it take a new employee to “spin up”?

Spin up?

It’s a technical term. We use it to indicate the process of “going up” the “learning curve.” When someone is spun up, he or she can successfully function in a new job or in a new role.

Obviously, businesses want qualified employees now. In most cases, they can’t wait for someone to move through the typically long learning curve. As a result, many employees—sometimes ones right on the firing lines—are asked to do work for which they’re not qualified. And the result is often poor quality work, bad customer relations, frustrated employees, lost sales, and increased costs.

So the challenge is to create ways for people to learn quickly and to apply their learning on the job. It’s what we’re calling the competitive learning curve cycle time. One of our clients calls it “time to performance.”

## *A Common Problem*

This particular client faced a dilemma of recruiting from an extremely limited pool of qualified employees. They also needed to introduce new products—a process that would generate significant training requirements for existing staff. Sound familiar? It’s a dilemma faced in spades by many businesses today.

At the heart of the dilemma is being able to define what spun-up people really look like—what good

*(Continued on page 14)*

*One goal of an ISD practitioner should be to accelerate employee “spin up” (it’s a technical term).*

## UPDATE: CADDI Projects

*CADDI clients  
are applying  
PACT Processes  
in a wide range  
of business  
settings.*

### *Bandag, Inc.*

Guy will soon co-conduct a CAD project with John Swinney for Bandag's management. He also continues development work on three workshops for Bandag's dealer operations and production managers. These compliment the recently developed and piloted Material Flow workshop.

### *General Motors University*

We continue our work with General Motors University to develop their competence in using the PACT Processes for T&D. We are supporting real projects that are "demo projects" for individuals targeted for development through training, co-conducting project activities with them, and providing formal coaching.

Guy is supporting GMU contractor Brian Blecke in conducting a CAD (called Modular Curriculum at GMU) for GM's global brand management team. After a four-day analysis meeting, a subsequent review and validation in Germany, embellishment by a new support group for brand managers, and the concurrent existing T&D assessments, we are preparing for the Analysis Phase gate review with the Project Steering Team. We'll then move into the Design Phase.

Pete is wrapping up a CAD/MC for the global HR function. This CAD/MC is establishing an overall path structure to be modified within each of the four global regions.

### *Eli Lilly and Company*

To support the rollout of a new competency model and curriculum for Brand Management, we are providing a set of tools for development planning. These include both individual and team capability assessment and development planning tools and a brief training program for managers on how to use them. The tools are expanded versions of CADDI's standard Individual T&D Planning Guide from the CAD process.

Guy is working with Lilly's global marketing and sales training organization to update its global district sales manager curriculum. A combined analysis/design meeting was held to produce the Performance Model and Knowledge/Skill Matrix, assess existing T&D (identified prior to the analysis/design meeting), and map out the T&D Path's Modules and Events.

### *Siemens Building Technologies, Inc.— Landis Division*

Kelly is managing an MCD project to build four T&D courses for sales engineers and sales managers. This effort comes on the heels of a CAD project conducted last year. Kelly, along with Guy, Pete, and Steve Muller (a freelance developer), will design and develop the training events that are planned for pilot testing during the second quarter.

Kelly and Pete have just conducted two of four MCD design meetings for the training courses for sales engineers. Kelly designed the first course that will overview the company's goal/vision for the salesforce and introduce the markets, products, and services. Pete designed the second, a two-week product training course that will teach product information, competitive positioning, and how to configure a system to meet customer business and technical needs.

Guy will conduct the third MCD analysis and design meeting for a sales manager course. This will lead to the development of several days worth of training on key aspects of their jobs and, specifically, how to plan and manage the training and development of their sales reps.

The implementation phase of the Time to Performance program is continuing. Implementation, being performed by our clients, requires on-site visits to each field location to introduce the system, establish the infrastructure (setting up appropriate files, work processes, roles/responsibilities), and conduct the first pass of individual qualification planning for new hires. CADDI's role is temporarily on hold until we resume development of qualification instruments for the next audience segment (project managers) in the second quarter.

Pete will be designing an introductory course on HVAC system controls by building on the previous CAD and qualification system work. The design concept is a series of simulations built around progressively more complex systems.

Pete and Kelly, along with the client co-program leaders, presented "Time to Performance: A Performance-based Qualification System" at the March 18 meeting of the CISPI chapter in Chicago. ▶▶▶▶

# CADDI Completes ISPI Awards Process

By Peter R. Hybert

This year marks the end of CADDI's seven-year involvement in the ISPI Awards of Excellence program.

We are leaving the process in good hands as Jackie Laskowski of Detroit takes over the Awards Committee chairperson role. Jackie is a long-time ISPIer and an experienced manager—we expect things to run even more smoothly next year.

Our involvement with the awards process started in 1992 when Guy led an SWI-sponsored team to re-engineer the awards process. The goal was to change the awards from a "norm-referenced" to "criterion-referenced" model. This required a change from "grading on a curve" to "grading on an absolute scale." (Like the Baldrige National Quality Award, the ISPI Awards of Excellence can now be won by anyone who meets all of the criteria.) Guy's work was handed to Byron and Nancy Stock for development. Guy continued to support ISPI's Awards of Excellence with Byron and Nancy.

The new process has been used three times and will be the subject of a continuous

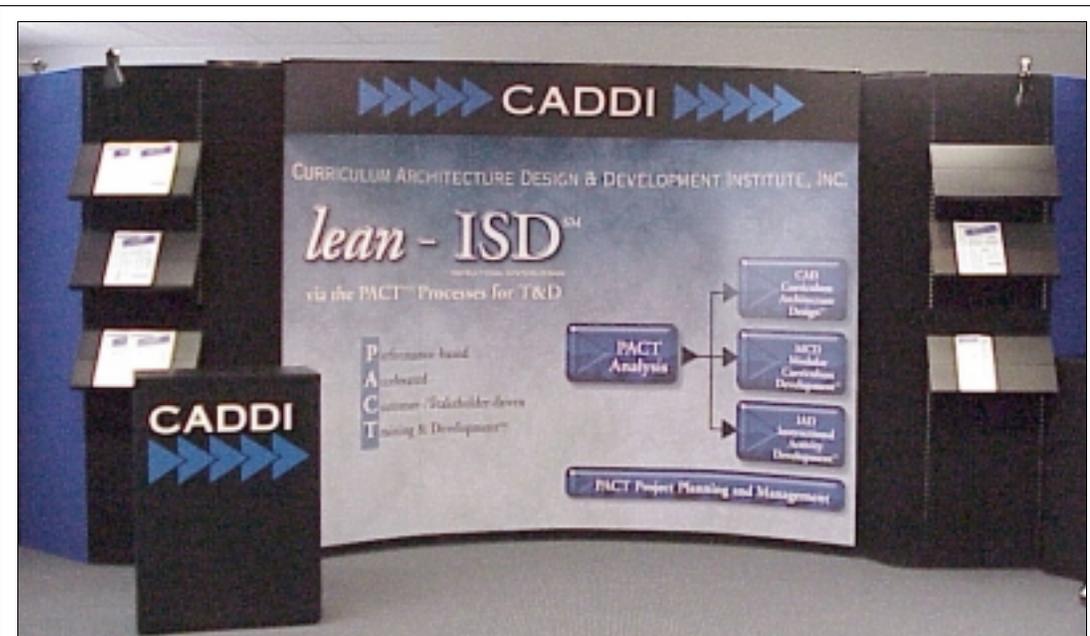
improvement meeting at the ISPI conference.

In 1996/97 Guy served as deputy Awards Committee chair while Pete headed the Outstanding Performance Aid subcommittee. Then, in 1997/98, Guy served as Awards chairperson, Pete took over as deputy Awards Committee chair, and Kelly entered the fray as an evaluator. Pete stepped up to Awards Committee chairperson this year, and Kelly served as an evaluator for the Performance Aids.

All of us at CADDI who have played a role in the process have learned a great deal from understanding the criteria for excellence and seeing some of the best projects in the business.

We've met some really sharp people who've contributed their time and expertise as evaluators and subcommittee chairs. And, we've seen some of the inner workings of ISPI and had a chance to contribute to the society. We are looking forward to the future of the Awards of Excellence program and expect to submit some CADDI projects—now that we will not be involved in the administration and selection processes. ▶▶▶▶

*Jackie Laskowski of Detroit will take over the role of Awards Committee chairperson.*



**Introducing CADDI's new conference booth that makes its debut at ISPI '99, March 23–25, 1999, in Long Beach, California.**

## A PACT PROCESS OVERVIEW

### *Developing Instructional Activities with IAD (continued)*

(Continued from page 1)

development of three categories of IAD: information activities, demonstration activities, and/or application activities.)

#### *IAD Teams, Roles, and Responsibilities*

As in all PACT Processes, the use of teams with clearly defined roles is critical to the success of an IAD project. Because the IAD process is *usually* used within an MCD project, the teams and their roles are similar to those in an MCD. The following teams are used:

- ▶ Project Steering Team
- ▶ Analysis Team
- ▶ Design Team
- ▶ Development Team
- ▶ ISD Team

The Project Steering Team (PST) handles the same tasks and issues as it does in CAD and MCD projects.

As in CAD and MCD, the Analysis (AT) and Design Teams (DT) are composed of master performers and subject matter experts.

The Development Team (DVT) includes master performers and subject matter experts who will work with the ISD developers to draft and refine all of the IAD materials.

The ISD Team plans and manages the project, as well as conducts/facilitates the meetings. They do the ISD work and own the T&D processes being used.

#### *Six Key IAD Outputs*

##### *Instructional Content: Awareness, Knowledge, or Skill Level*

Most of the time, instructional content at an awareness, knowledge, or skill level is developed within an MCD project. Generally, the Design Team determines the level to which content is covered. The remaining types of IAD outputs typically fall into one of the types of IAD—usually the application of the knowledge or skill.

#### *Knowledge Tests*

The performance improvement needs of your customer may be quite narrow. Current strategic business issues may drive your customer's requirements. He or she may want a series of written *knowledge tests* to assess the knowledge base of the incumbent populations for key job categories.

Knowledge tests are very familiar to most of us and may include true/false, multiple choice, fill-in-the-blank, and/or essay questions.

The Performance Model (PM) and the Knowledge/Skill Matrix (K/SM) are the sources for finding the right type of test question format to use. Seeing the link between the knowledge item and its use in the performance situation should guide the developer to follow best practices in the construction of written tests.

The Performance Model and Knowledge/Skill Matrix help focus the developer on performance first, content second. Keep in mind, however, that *knowledge tests test knowledge, not performance.*

#### *Performance Tests*

Performance tests test the *real* (or as *near-to-real* as we can feasibly get) individual performers' capabilities/competency. This is done through testing instruments and evaluation/assessment processes designed and developed to *certify* or *qualify* employees for specific performance capability. (We've included a sample performance test on the following page.)

These tests can include performing real work, performing simulated work, or "talk-through" troubleshooting.

#### *Simulation Exercises*

Simulation exercises attempt to approximate the "real world" and, ideally, put participants in situations where they must apply knowledge (either previously gained knowledge or that gained through training). A simulation exercise could be an in-basket exercise that tests the participant's ability to deal with various on-the-job activities. In this case, it could be used as part of a candidate selection process. It could also be used as a practice opportunity, a pretest and/or posttest

(Continued on page 7)

*The IAD process makes use of teams in much the same way that the MCD process does.*

**A PACT PROCESS OVERVIEW**

***Developing Instructional Activities with IAD (continued)***

within T&D, or as an additional practice opportunity after T&D.

Simulation exercise efforts typically produce

- ▶ Datapaks
- ▶ Participant output formats/templates
- ▶ Facilitator tools/templates

The simulation exercise Datapaks provide the instructions to the learner, examples of the outputs to be produced, background and scenario information, specific data and information for use in the exercise, and a schedule for conducting the simulation exercise.

Formats/templates are “fill-in-the-blank” format that the exercise output may require (as appropriate). We believe in tightly structuring the exercise instructions, process, and outputs, but there are *rare* times when that may not be appropriate.

The facilitator tools and templates can include observer critique sheets/checklists, answer guides, and even last-minute data additions. We put these

last-minute additions in the “monkey wrench” category. These are especially important if the real world often throws new obstacles onto the path of superior performance and creates new, last-minute problems and opportunities.

A complex simulation exercise might focus on the manager’s role in the steps of a progressive discipline procedure or on the project team leader’s role in the phases of a product development project or process. Ideally, the simulation exercise gives the learner an opportunity to practice certain aspects of the job/role performance at varying levels of difficulty.

In the first example, the manager may find himself in a series of individual interactions and group meetings. If the actual job required interacting with union-represented employees, the simulation might include meeting with a union-represented individual alone and then with the individual and the local steward. In other meetings, another management representative may be there to take notes and then act as a witness to the proceedings

*(Continued on page 8)*

*Good simulation exercises are designed to put learners in situations that safely test the skills they need in the real-world environment.*

**ABC Company Performance Test**

<b>Job Function</b> Specialist	<b>Path</b>	<b>Phase</b> Advanced	<b>Task</b> Advanced Programming	<b>Number</b> S-A-01
<b>Overall Performance Measurement Criteria</b>			<b>Type</b>	
<b>Met</b>	<b>Not Met</b>	<b>Criteria</b>	<input checked="" type="checkbox"/> Real Work Performance <input type="checkbox"/> Simulation <input type="checkbox"/> Talk-through Simulation <input type="checkbox"/> Checklist <input type="checkbox"/> Other _____	
<input type="checkbox"/>	<input type="checkbox"/>	Functions per sequence of operations		
<input type="checkbox"/>	<input type="checkbox"/>	Written in accordance with company standards (block code)		
<b>Time Requirements</b>			<b>Method (if Real Work)</b>	
Qualification Cycle Time	Depends on project _____		<input checked="" type="checkbox"/> Output/Product Review <input type="checkbox"/> Process Observation <input type="checkbox"/> Customer Poll	
Evaluator Time	Depends on project _____			
<b>Site</b>		<b>Qualification Date:</b> _____		
<input checked="" type="checkbox"/> On-site <input type="checkbox"/> Branch <input type="checkbox"/> Other: _____		<b>Qualified:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>If No:</b> <input type="checkbox"/> Repeat entire test <input type="checkbox"/> Repeat test steps: _____		
		<b>Rescheduled for</b> _____		
		<b>Appeal requested:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>Evaluator Comments</b>			<b>Specialist Comments</b>	
<b>Evaluator:</b> _____ <b>Signature:</b> _____			<b>Specialist:</b> _____ <b>Branch Name:</b> _____ <b>Signature:</b> _____ <b>Branch #:</b> _____	



A PACT PROCESS OVERVIEW

*Developing Instructional Activities with IAD (continued)*

*Electronic Desk Procedures*

A full series of performance-based electronic desk procedures (which are just like the performance aids or job aids) are EPSS (electronic performance support systems). They can have a high return on investment if they actually work and are used as intended by the target audience.

The electronic desk procedures are frequently used in help desk or call center operations where a quick response is needed. These calls may include complex and varied scenarios that need to be handled within defined parameters and where decision rules can be used to process the call, and do it correctly.

Electronic desk procedures often begin as paper desk procedures and evolve to electronic format accessed through a computer system.

*Parts and Pieces Can Lead to the Whole*

Portions of instructional content can be developed without the entire training program being developed. Sometimes your client's need may be to build some content for immediate publishing, prior to the release of the full training package.

Or maybe the entire T&D package is "just a maybe"—maybe it will be built and maybe it won't. If it does end up being built, you'll want the earlier created content, demonstrations, or exercises to be conducive to the building of the entire course. You'll want the earlier content to be *robust* to future add-ons. If it is, you'll help

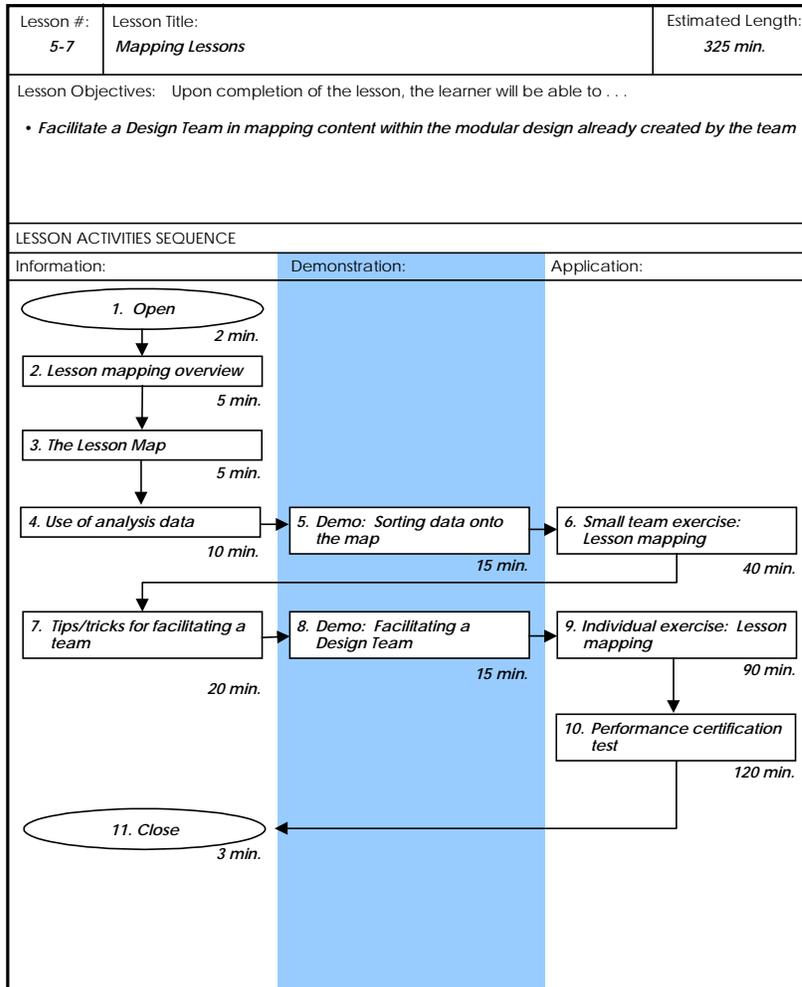
minimize any additional costs and cycle times downstream.

Instructional content may be delivered at a "nontraining" forum, such as a trade show, sales conference (for internal or external audiences), or at sales meetings, etc. For example, in the initial release of the training, some key content could be delivered at the next quarterly regional sales conference, with the related exercises taking place the following quarter. Granted, it may not be ideal and you may find yourself grudgingly complying with your customers' wishes. But it can be done if planned properly on the front end.

*(Continued on page 10)*

Lesson Map of Instructional Activities

TMC T&D



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*Instructional content should be robust to future add-ons—the kind your customer hasn't identified yet!*

## A PACT PROCESS OVERVIEW

# Developing Instructional Activities with IAD (continued)

(Continued from page 9)

### Three Kinds of Instructional Activities

The MCD lesson design methodology includes three types of “instructional activities.”

- ▶ Information
- ▶ Demonstration
- ▶ Application

#### Information Activities

Information activities provide knowledge in one of several forms depending on the material being displayed. They may be

- ▶ Instructional lectures
- ▶ Instructional coaching
- ▶ Self-paced readings
- ▶ Video segments
- ▶ Audio segments

#### Demonstration Activities

These activities show the learner some aspect of the performance required. They may be live, staged presentations; staged presentations presented on video; or nonstaged performance observations.

#### Application Activities

In contrast to demonstration activities where the learner *observes*, application activities provide the learner with the chance to actually *participate and practice*. They are usually

- ▶ Knowledge tests
- ▶ Performance tests
- ▶ Simulation exercises
- ▶ Performance aids
- ▶ Electronic (or paper) desk procedures

They may take the form of verbal quizzes, panel discussions or dialogue, paper and pencil tests, role-plays, or simulation exercises.

### How IAD Benefits the T&D Customer

The T&D customer can benefit from a narrow IAD project because the focus of the effort is squarely aligned with performance requirements:

- ▶ Knowledge tests test for a fundamental understanding of facts and a general comprehension of the material.
- ▶ Performance tests measure the capability to actually do the required tasks. They can simulate the work that is to be done, or be designed around real work or work that has been completed.
- ▶ Simulation exercises help ensure mastery of a task. This is especially true when the simulations build on previously learned material (a *build-up approach* using knowledge and skills) and incorporate the real-world issues and barriers to high performance. Simulation exercises present the opportunity to practice in the relatively safe confines of T&D where it is often easier to experiment with new behaviors and tasks than it is on the job. Of course, it depends on the criticality and impact of performance failures. If the learning situation calls for a simulation of real work, the IAD process guarantees a focus on real performance.

### How IAD Benefits the T&D Supplier

As with CAD and MCD, the T&D suppliers benefit from these controlled IAD processes so that they can better forecast their costs and schedules. Even more important, the focus is on improved human performance within the business processes. This will mean much less rework coming out of pilot-test sessions. ▶▶▶▶



**Welcome Elyse Andrea Corman! Ellie, daughter of CADDI marketing manager Jennifer Corman and her husband, Mark, was born December 26, 1998.**

*Simulation exercises that build on previously learned material help ensure mastery of a task.*

## It Only Counts if You Can Do the Job! (continued)

(Continued from page 2)

### What Is a Performance Test?

A performance test is a demonstration (or hands-on proof) that someone can actually perform a task in the real world. It's not just *knowledge* that there are square pegs and square holes, but proof that the participant can actually *perform the work* of putting the square peg in the correct hole. Put another way, it's not just recalling knowledge or performing artificial enabling tasks such as labeling equipment components on a drawing. This is a paradigm shift for many T&D practitioners and the line managers who are our internal/external clients.

There are four key principles for performance tests.

-  A performance test is based on observing a performance or evaluating an output using standard objective criteria.
-  A performance test should be reliable and fair with little variability from one evaluator to the next.
-  Performance tests need to verify only actual work or a simulation of it and not enabling knowledge or skills, for if someone can perform the work, then they must by definition also possess any necessary enabling knowledge or skills.
-  Performance tests should replicate real-world conditions, including the

(Continued on page 12)

*Performance tests not only show that learners know the difference between square pegs and round holes, but prove they can match them up!*

<i>What Will Be Assessed</i>			
	Description	An Everyday Example	A Project Example
<b>Real work</b>	Observing a candidate perform the task and/or produce the output in a real situation	Watching your teenager fill the car's gas tank and check the oil	Program and start up a piece of equipment in the field
<b>Simulated work</b>	Observing a candidate perform an approximation of the task or produce a limited output in a situation similar to the real job	Watching your teenager change a tire in the driveway instead of waiting until he or she has a flat tire on the road (this would include safely jacking the car up and loosening the lug nuts, etc.)	Creating <i>part</i> of a software control program for a typical system to run on a <i>stand-alone computer</i> instead of a <i>complete</i> program that would run on <i>actual equipment</i>
<i>How It Will Be Assessed</i>			
	Description	An Everyday Example	A Project Example
<b>Reviewing the output</b>	Evaluating the result or product of a work process or task based on defined criteria	Deciding if a turkey is cooked based on a temperature reading, the color of the skin, etc.	Reviewing a printout of a computer program
<b>Observing the process</b>	Observing the work as it occurs and evaluating the process steps according to defined criteria	Watching someone stuffing a turkey to ensure that they are using safe food-handling techniques	Observing the technician starting up a piece of equipment in the field

## *It Only Counts if You Can Do the Job! (continued)*

(Continued from page 11)

use of typical job tools and resources in the typical work environment.

Designing performance tests is similar to conducting a task analysis. At the simplest level there are two key design choices.

- ▶ *What* will be assessed—will it be *real work* or a *simulation* of real work
- ▶ *How* it will be assessed—will *actual* work be observed or will the *output* of the work be reviewed

While it is preferable to observe real work being done, sometimes it is more practical to use a simulation. For example, if doing the real work could result in injury or some other unsafe condition, it may be necessary to simulate the work. Or, if you plan to include the test inside of a training program, you will almost certainly need to simulate the work.

The choice between evaluating the output of the process or observing the process itself depends on the type of performance. For example, if a participant is required to use a specific soldering technique properly while assembling a component, it may be necessary to observe the technique rather than just the final soldered joint. On the other hand, reviewing a printout of computer software code (an output) is preferable to standing over a learner and watching him or her type the code into a computer.

### *But She Passed the Bar Exam: Why Knowledge Tests Fail*

During a speech at the Training '99 Conference held in Chicago, Elizabeth Dole, former president of the Red Cross, told the story of her first case as an attorney. She had passed the bar exam with flying colors but had never conducted a trial. Knowing her obvious deficiency in real-time court experience, she observed night court to get an idea of how trials are conducted and how lawyers and judges conduct themselves.

Dole's experience shows the difference between *knowing* and *doing*. The bar exam, for example, tested enabling knowledge but not the skill of applying it. Dole was smart enough to know that knowledge of law was not enough to win her client's case. The proof would be in the performance.

There are, however, some situations where

knowledge/skill tests are appropriate. One appropriate use is as a diagnostic to determine *why* a person is unable to perform a task. Within a training event, enabling knowledge/skill tests can help trainers monitor learning. Another use is to screen out or qualify candidates for performance testing. And finally, on the practical side, sometimes knowledge/skill tests are a necessity—most regulatory requirements are built around knowledge tests.

But remember, a knowledge/skill test does not ensure that someone can actually perform a task. You have to verify the real thing!

### *Performance Tests Have a Variety of Uses*

If performance tests are designed as part of a system, they should lend themselves to reuse. For example, suppose you had a performance test that required the participant to develop a short computer program from a specification. The test tool, for use when reviewing the output, would consist of the criteria for the finished program (e.g., syntax, structure, comments, etc.).

Performance tests can appear within training (as pre- or posttests) or on the job (as an S-OJT checklist, job aids, or qualification instruments).

The greatest variable in these settings is the user and the amount of infrastructure and administrative support needed to publish the performance test instruments, train the evaluators, and track completion by participants.

(The Lesson Map on page nine illustrates how performance tests can be used for different purposes in the learning process.)

### *Performance Testing Is not Difficult to Implement*

Performance tests are best developed and used within an integrated approach to human performance and T&D—CADDI's PACT Processes and associated methodologies, for example.

An integrated model allows you to analyze the performance and enabling knowledge and skills and then to design the systems that support it.

(Continued on page 13)

*If performance tests are designed as part of a system, they should lend themselves to reuse.*

## *It Only Counts if You Can Do the Job! (continued)*

The systems can include training, selection, feedback, and other human performance support systems in addition to performance-based testing and qualification.

We have found that most candidates actually like performance tests. Once they get over their initial resistance to the idea of “testing” and realize they will be evaluated against standard criteria, they see the potential benefits. For the employee, this often means avoiding training they don’t need (because they can “test-out” through a

performance test). Equally important, subjective evaluations (a common source of workplace friction) are eliminated because the tests are standardized for all. From a manager’s standpoint, performance-based testing helps identify employees who need additional coaching to meet quality standards. ▶▶▶▶

### Linking Performance Testing to Qualification Systems

We are completing a project in which performance-based testing is being used as the basis for an employee qualification system. Our client also wanted a performance-based Curriculum Architecture Design (CAD). Eleven different audience groups were addressed.

In some cases, the CAD design was completed first. In others, the qualification path and instruments/specifications were completed first or in the same meeting. Because the PACT Processes and the performance-based testing approach were

integrated, it was possible to easily use the same analysis data for both tasks. We were also able to “chunk” (a term we use to denote groupings of similar material) the performance and enabling knowledge/skills once for both training and testing. This resulted in significant cycle time and cost savings compared with doing the curriculum and the tests separately.

For a number of years we have been designing and developing performance testing and qualification systems for maintenance technicians, field

system specialists and installers, and franchise dealers. There is a great deal of similarity between designing these systems and designing performance-based T&D systems.

Remember the old ISD adage, “write the tests first”? Whether you are designing performance-based T&D or testing, if you build the performance tests first, the enabling knowledge and skills will follow.

You’ll find more information on our Web site in an article called *Competitive Learning Curve Cycle Time*. ▶▶▶▶

*If you build performance tests first, the enabling knowledge and skills will follow.*

## *Straightforward S-OJT (continued)*

(Continued from page 3)  
task clusters or individual task items)

- ▶ The appropriate point in the 18-month development cycle at which each assignment could first be performed

The team also designed a standard template to be used in creating the support materials for the structured, on-the-job assignments. These templates included a description of the assignment, conditions, criteria, etc., as well as an administrative checklist so the coaches/mentors could keep track of what their learners could be assigned.

The SME team assigned responsibility for the various

assignments. A small team of developers quickly developed the materials for use by the trainees.

The approach to structured job assignment materials used at General Motors can be applied in many settings and illustrates how development can be taken beyond classroom learning to real-world applications.

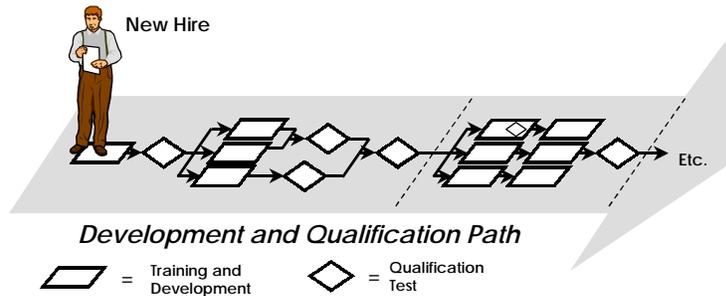
The key was the Performance Model. By starting with an analysis of *performance* and designing a *performance*-based curriculum, the extension to performance-based structured work assignments was straightforward. It’s all about the performance. ▶▶▶▶

## Shorter Learning Cycles (continued)

(Continued from page 3)

performers do that makes them good performers! In PACT Process language, this means creating a Performance Model and defining the enabling knowledge and skills that support it.

The same client also faced another common problem: training that was available only in a group-paced format, often in the form of week-long courses with even longer waiting lists of participants. This prolonged “time to performance” and kept new employees (and



existing technicians) from getting quickly spun up on new products and processes. In addition, existing training focused largely on attaining knowledge (whether it was “nice to know” or “have to know”) rather than on performing work. These factors made it difficult to certify that participants could actually perform their jobs after they completed a learning activity.

### Clearing Performance Hurdles

Such situations are often ideal candidates for performance-based qualification systems. These systems aren't random “tests” but structured development and qualification paths that employees follow over the course of their careers. Moving along the path requires the learner to demonstrate competence in certain preidentified areas. For example, a technician might have to show (in a hands-on demonstration) that she could regulate a building's heating and cooling system by properly installing and adjusting a complex thermostat controller. This hands-on test becomes one of a series of hurdles that follow a set of learning activities.

The learner and his or her manager decide how to clear the hurdles on the development path

through some local coaching/tutoring, attending a home office course, reading technical manuals, or using some combination of these. By first defining the qualification instruments, it becomes easier to reconfigure existing training to make it more accessible and to fit the sequence on the development path.

### Setting the Bar

Reducing the learning curve cycle time requires “setting the bar” or establishing a definition for “base line” performance. This is the minimum standard for performance. Base lines could be set by time frames (“how far you should be after nine months on the job”), as the lowest common denominator capabilities (“the bare minimum everyone needs to be able to perform”), as a desired set of capabilities (“able to handle the following tasks in most common situations”), or even as generic “core” knowledge and skills (“the stuff everybody needs to know”).

But a better way to reduce learning curve cycle time is to set base lines against work performance rather than on a time frame or on “core” capabilities. By using performance base lines, the focus shifts from “tenure and knowledge” to “performance and results,” and thinking shifts from “everything that someone might need to know” to “what they really need to do the job.” The latter results in learning events that are closely tied to the Performance Model. Establishing base line requirements based on performance is also more likely to be fair and consistent among different business locations that perform similar work. ▶▶▶▶

If you'd like to learn more about reducing learning curve cycle time and how one client applied this in a technical environment, look for the full version of this article called *Competitive Learning Curve Cycle Time* on our Web site at [www.CADDI.com](http://www.CADDI.com)

*By using performance base lines, thinking shifts from “tenure and knowledge” to “performance and results.”*

*The Development and Qualification Path is also known as the T&D Path.*

# Successful Performance Testing Requires Solid Administrative Processes

By Kelly A. Rennels

Designing and developing performance tests and qualification instruments is only one piece of the performance testing/qualification system puzzle. Without the *administrative processes* that support and manage a performance testing and qualification system, you won't have a chance of being successful.

The administrative processes

- ▶ Make it as easy as possible to use the system by creating standard forms to capture data.

- ▶ Identify and make changes to the system to improve operation and keep it abreast of changes in the business (i.e., new products, processes, or tools).
- ▶ Support employee qualification and overall capability.
- ▶ Provide data that can be used by management to match capability with business opportunities and demands.

The following two tables show the key administrative processes and the participants' roles and responsibilities. ▶▶▶▶

*Administrative processes for performance testing support the system throughout its entire lifecycle*

Key Administrative Processes	The Process	Is Used for
	Planning and registering	Creating a plan and registering for the test/session
	Administering the test/assessment	Preparing for, conducting, and documenting a test/assessment session
	Appealing a decision	Requesting and approving the decision to override a decision handed down by an evaluator
	Managing and reporting the data	Maintaining the system data and records
	Selecting and training the evaluators	Selecting evaluators and preparing them to administer the assessments
	Developing the test/instrument	Developing new tests/ instruments and making required changes to existing tests/instruments
	System communication	Planning and developing "informationware" to achieve program purposes
Managing changes to the system	Planning and authorizing changes to the system	

Key Roles and Responsibilities	Role	Responsibility
	Sponsor or board	Setting priorities (and direction) for the system and making key decisions on approval of changes, appeal decisions, etc.
	Administrator	Handling operation of the system including data input and reporting and coordination with users
	Test/instrument developer	Working with subject matter experts to create new tests and instruments or to modify existing ones
	Subject Matter Expert (SME)	Providing development assistance to review new and existing tests and instruments
	Evaluators	Conducting assessments and providing feedback to candidates
Candidates	Completing plans, tests, and instruments	

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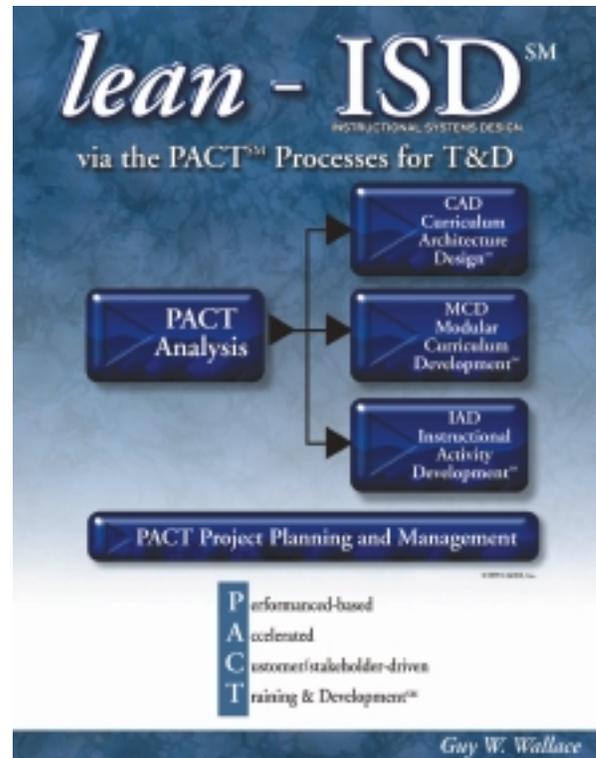
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Guy W. Wallace

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## *PACT Processes Are Part of a Bigger Picture of Learning By Design, Not Chance*

By Guy W. Wallace

Our clockface model is a macrolevel view of the systems needed to make T&D work in the real world of business, where T&D should actually return more to the corporate coffers than it takes out.

In the quality movement, we're told that everything is a process. The challenge is to minimize the gaps and overlaps between them. And when process mapping begins at the microlevel instead of at the macrolevel, gaps are inevitable. Outputs from one process don't match the input needs of another.

Thus, our clockface is a model of the *systems* of T&D. The clockface is a way of looking at these systems and their interrelationships in three

segments: leadership systems, core systems, and support systems.

The first five systems shown on the clockface provide *leadership and direction* to the entire T&D efforts within a business.

**Governance and Advisory Systems** are the central, driving force behind the strategies for business-based T&D. These systems organize all key stakeholders of the enterprise and formalize the channels of communication. They provide the forum for T&D's internal marketplace customers to provide *advice*, and give the organization's executive-level leadership *governing* power over T&D strategies.

*(Continued on page 19)*

## Learning By Design (continued)

(Continued from page 18)

In the world of T&D, **Strategic Planning** is effective only if it addresses the critical business needs—the *showstoppers* and make-or-break opportunities—of the enterprise today and tomorrow. This system uncovers exactly where the key stakeholders and shareholders want their strategic bets placed. It also determines resource requirements and assesses the T&D organization's ability to carry out plans.

While the Strategic Planning Systems are focused on broad business issues and how T&D supports them, **Operations Planning and Management** organizes and guides the day-to-day operations and management of the various T&D functions. These include annual and quarterly planning, budgeting, and accounting processes.

**Cost/Benefits Measurement Systems** organize the measurement and reporting of all T&D-related metrics. They translate data into information and interpret (where appropriate) this for the T&D leadership, staff, and its key customers and stakeholders.

**Process Improvement Systems** respond to issues and trends from the Measurement System. They also provide order to the quality/process improvement efforts for both incremental continuous improvement and discontinuous improvement to the processes and/or of the T&D system components.

The three *core systems and processes* of T&D are its real business: design, development, and deployment of performance-based T&D.

**Product and Service Line Design Systems** define the high and critical T&D products and services (not the ones of medium or low importance) that must be developed or acquired as part of the broad Curriculum Architecture Design (CAD).

**Product and Service Line Development Systems** turn specifications into actual T&D by building or buying, or by modifying existing products and services such as Modular Curriculum Development (MCD) and Instructional Activity Development (IAD).

**Product and Service Line Deployment Systems** organize and distribute these products and services in several ways through

- ▶ Traditional instructor-led, group-paced classroom deliveries
- ▶ Self-paced learning
- ▶ Structured, coached/mentored events
- ▶ Computer-based delivery, etc.

The remaining four systems *support* systems and processes for all of the other T&D systems and are critical enablers for the high performance capability of the core and leadership processes.

**Marketing and Communications Systems** organize and distribute information throughout T&D's marketplace. These communications and marketing/selling efforts are not about selling *all* T&D to *everyone* (a "learning by chance" approach), but helping customers make informed choices—a "learning by design" methodology. This is where the T&D Path and Individual T&D Planning Guides are deployed.

**Financial Asset Management Systems** are the processes that track and monitor the fiscal obligations of the T&D enterprise and keep them within predetermined budget levels.

**Human and Environmental Asset Management Systems** organize and manage the acquisition, development, assessment, and retention of T&D staff. They also include management of the supporting infrastructure (facilities, equipment, and information) needed to deploy T&D.

**Research and Development Systems** are the processes that look into the future and keep the T&D organization on the cutting edge. They also serve as the "testing" processes that ensure T&D is delivering on its promise of improved performance and a high return on investment. ▶▶▶▶

*Learning by Design versus Learning by Chance* is the title of Guy's "book-in-progress" in which the entire T&D enterprise is viewed as an interrelated system of processes. You'll learn more about learning by design and the clockface in future issues of our newsletter.

## CADDI CREWMATE PROFILE

# Deb Arndt, CADDI's Business Manager

Deb Arndt, CADDI's business manager, is a native of Irving, Texas and a veteran CADDI consultant. In her current role, she manages CADDI's infield staff and office environment. She is responsible for CADDI's staffing and management, overseeing the production workload, administering information systems, managing financial and legal processes, and supporting marketing efforts.

Prior to becoming the business manager, Deb managed more than 25 projects as a consultant using the PACT Process for T&D methodologies, specifically Curriculum Architecture Design (CAD) and Modular Curriculum Development (MCD), as well as training systems architectures. She served as lead analyst, designer, developer/writer, and project manager on more than 15 performance-based MCD projects and played various roles in six CAD projects—from project support to project management to facilitation.

"Because I understand how the PACT Processes work," Deb said, "I am able to translate meeting flip charts and materials generated by the consultants and SMEs when compiled for our clients. On project work, I serve as a liaison between consulting and production to translate and interpret process outputs so that we can turn around our deliverables in a more expedient time frame." The result is more accurate, higher quality output.

Deb has worked with some of CADDI's largest clients including Amoco, Bandag, Eli Lilly, and General Motors University. She enjoyed all her contacts with clients but especially enjoyed the projects in which she expressed her own creativity. A 1996 project for Eli Lilly allowed her to use these talents in showcasing the curriculum for organizational effectiveness consultants. She partnered with the client to design an "open house" format to display the outputs of a mini-CAD. The display included supporting materials that defined the different portions of the curriculum. Visitors

participated in a walk-through explanation by the project champion. "It was a great way to make the curriculum visible to its stakeholders. It was a project that allowed me to use my creativity to communicate a complicated system."

Deb is a 1990 graduate of Illinois State University with a Bachelor of Arts degree in psychology and a minor in Spanish. From 1990–1993, Deb was the human resources generalist at Delnor-Community Hospital in Geneva, Illinois where she concentrated on unemployment claims, non-exempt recruiting, and the development of an employee benefits database. During this time, she also was a freelance desktop publisher for three independent ISD consultants. After leaving her position at the hospital, she became a full-time desktop publisher to those consultants. Deb learned about courseware

development and the training field. The consultants Deb was working with taught her the basics of ISD and thought she had the "knack" for it. Through her work during this time, she was contracted for a job at SWI. The SWI partners received positive feedback from the clients, and Guy approached her with a full-time position with the company in 1994.

When she's not in our Naperville office, Deb can be found on the volleyball court either coaching her 14-under team with DuPage *Express* Volleyball Club or playing competitive ball in the Chicagoland area. "Coaching and playing volleyball are two of my outlets. Coaching allows me to share what I know with young talent. It is fun to see a young player with drive and desire listen to and learn from my words and actions to become a better player. Playing is a good way to keep in tune with my own skills and be around others with the same passion for the game." When the weather turns warm, Deb is likely to be seen on the Fox River waterskiing or wake boarding with her fiancé, Chad Smits. Deb and Chad will be married July 31 in Oak Brook, Illinois.



*"Deb's experience with the PACT Processes as a consultant is a real strength when it comes to managing our business," said Guy. This gives her unique insights into the work that CADDI's "infield" does to support the "outfield" consultants Guy, Pete, and Kelly.*